



# ATP405 — N-Channel Silicon MOSFET

## General-Purpose Switching Device

### Applications

#### Features

- 10V drive.
- Avalanche resistance guarantee.
- Halogen free compliance.

#### Specifications

**Absolute Maximum Ratings** at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		100	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		40	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	160	A
Allowable Power Dissipation	$P_D$	$T_c=25^\circ\text{C}$	70	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		148	mJ
Avalanche Current *2	$I_{AV}$		40	A

Note : \*1  $V_{DD}=30\text{V}$ ,  $L=100\mu\text{H}$ ,  $I_{AV}=40\text{A}$

\*2  $L \leq 100\mu\text{H}$ , Single pulse

**Electrical Characteristics** at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1\text{mA}$ , $V_{GS}=0\text{V}$	100			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=100\text{V}$ , $V_{GS}=0\text{V}$			10	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}$ , $V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10\text{V}$ , $I_D=1\text{mA}$	2.0		3.5	V

Marking : ATP405

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# ATP405

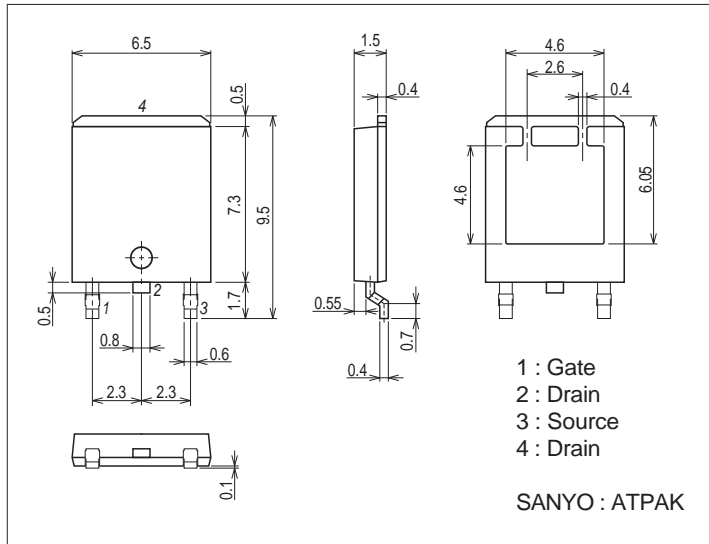
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=20A$		62		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=20A, V_{GS}=10V$		25	33	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=20V, f=1MHz$		4000		pF
Output Capacitance	$C_{oss}$	$V_{DS}=20V, f=1MHz$		300		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=20V, f=1MHz$		170		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		38		ns
Rise Time	$t_r$	See specified Test Circuit.		125		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		220		ns
Fall Time	$t_f$	See specified Test Circuit.		150		ns
Total Gate Charge	$Q_g$	$V_{DS}=60V, V_{GS}=10V, I_D=40A$		68		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=60V, V_{GS}=10V, I_D=40A$		14		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=60V, V_{GS}=10V, I_D=40A$		15		nC
Diode Forward Voltage	$V_{SD}$	$I_S=40A, V_{GS}=0V$		0.9	1.2	V

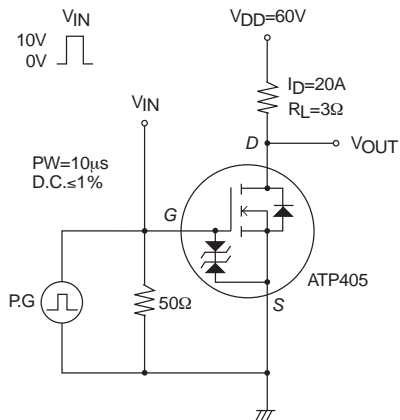
## Package Dimensions

unit : mm (typ)

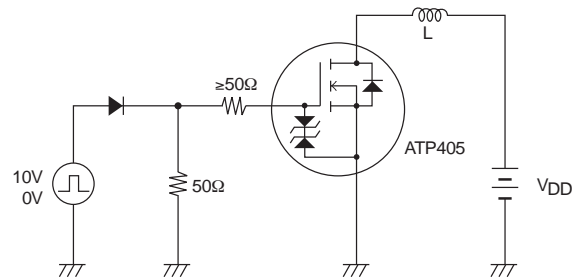
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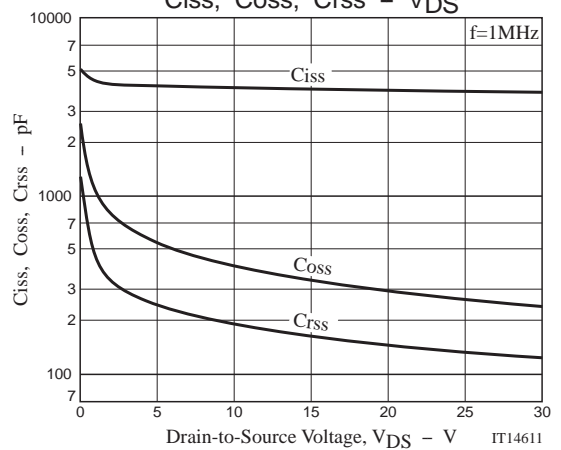
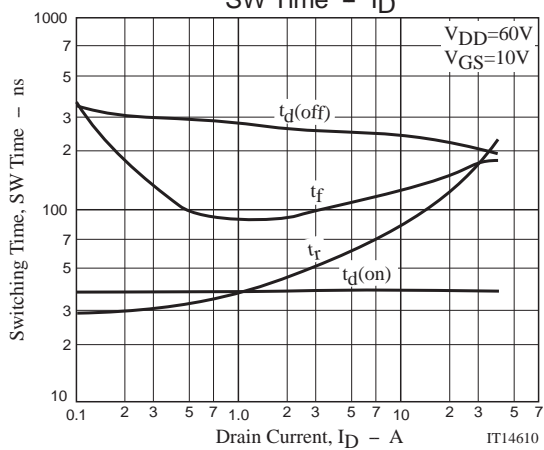
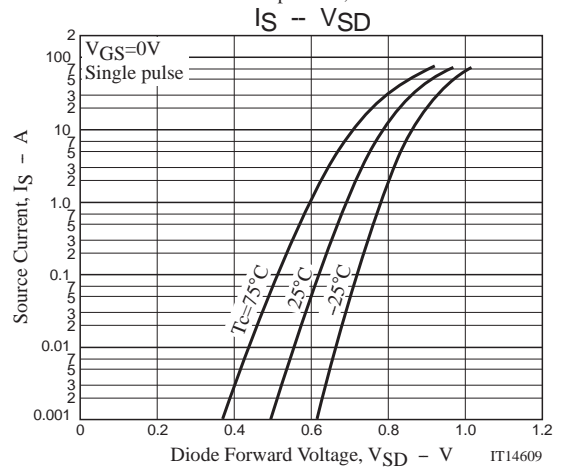
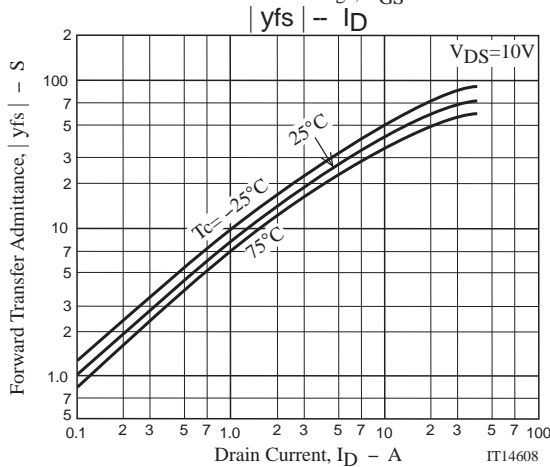
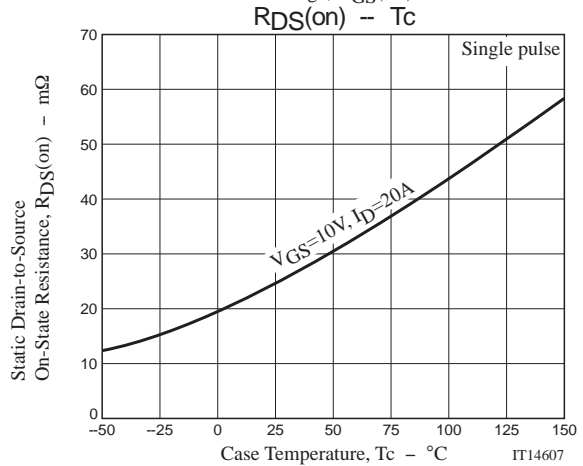
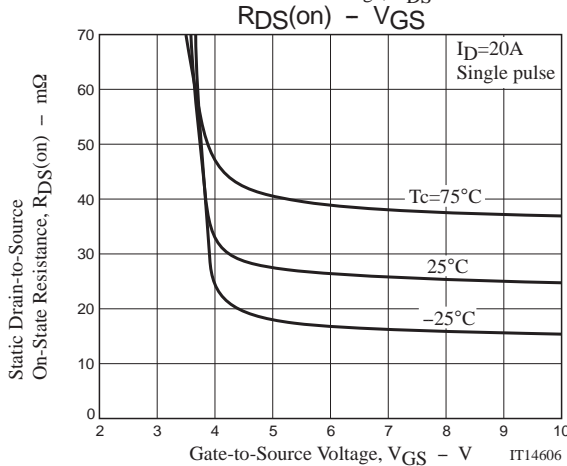
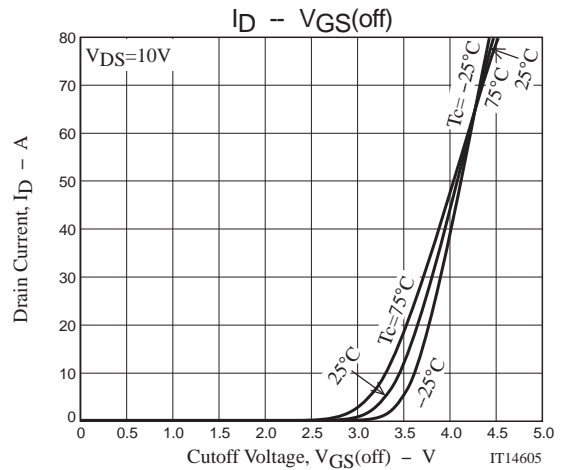
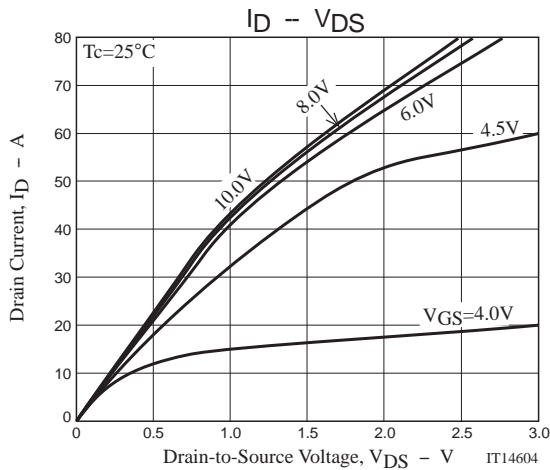


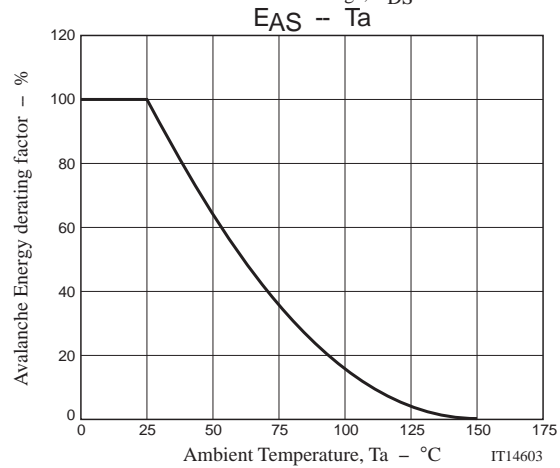
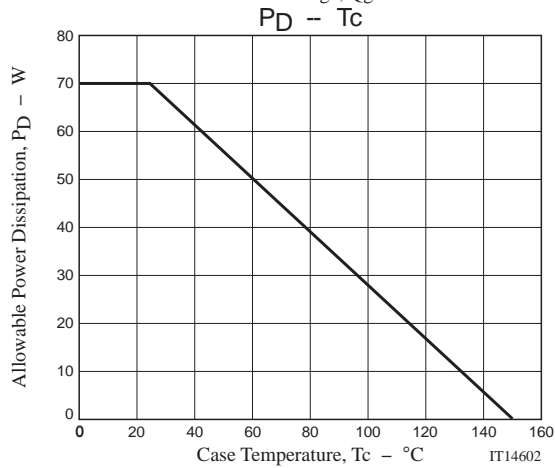
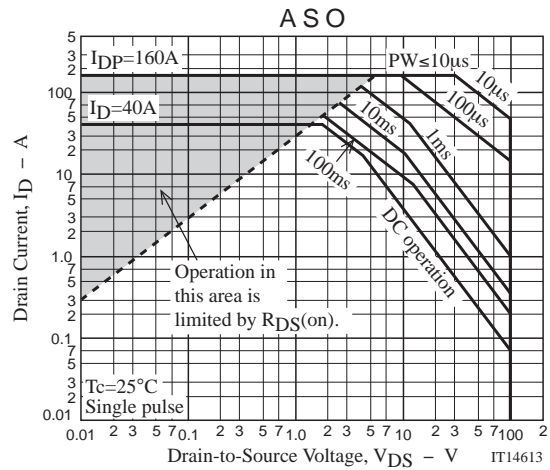
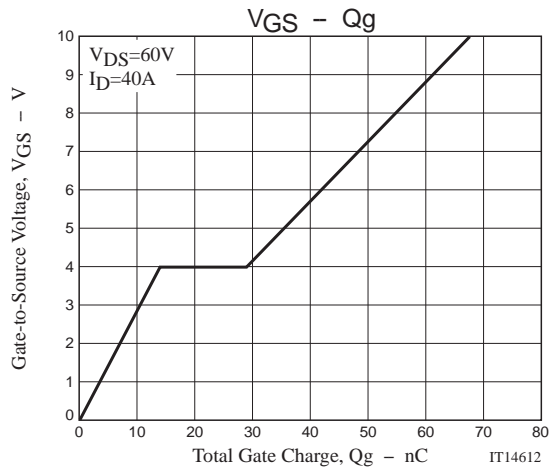
## Switching Time Test Circuit



## Avalanche Resistance Test Circuit







Note on usage : Since the ATP405 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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